RESEARCH AND DEVELOPMENT, NEUCHATEL - QUARTERLY REPORT

DIVISION : RESEARCH

SUBJECT TITLE : NEPTUNE

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OBJECTIVE
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To perform sidestream smoke (SS) analyses of prototypes and/or commercial cigarettes as analytical support for Product Development PME, PM-US, and on special request.

RESULTS
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Room SS analyses

As support for an external project four prototypes and a reference cigarette (2R1F) were smoked and analysed for SS yields. The four prototypes were prepared from an identical blend with various concentrations of nitrate in the reconstituted tobacco portion.
The results are listed in Table 1.

The only SS parameters influenced by changes in filler nitrate concentrations are the nitrosamines, DMNA and NNK. Their concentrations increase, as expected, with increasing filler nitrate.
The SS NO concentration is hardly affected by any changes in filler nitrate concentration, although the one for the mainstream smoke increases with increasing filler nitrate concentrations.

Method development

Based on an already existing method for benzene in air [1], a $HS\text{-}GC^2$ method was developed, which allows the determination of benzene in sidestream smoke.
For the German C20 reference cigarette, approximately 600 ug benzene per cigarette were found.

REFERENCE
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[1] Krebserzeugende Arbeitsstoffe, Anerkannte Analysenverfahren, Carl Heymanns Verlag KG, 1983.

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Source: https://www.industrydocuments.ucsf.edu/docs/mqnm0000

TABLE 1 : Sidestream smoke room values of prototypes and a reference cigarette (2R1F) having varying filler nitrate concentrations

		Prototypes				
Parameter	Delivery	2R1F	C11	C12	C14	C13
N-Nitrate (%)		0.19	0.05	0.11	0.23	0.41
CO	mg/puff	4.06	5.21	5.81	5.54	6.43
CO2	"	34.41	47.68	49.15	46.81	52.85
NO	"	0.14	0.18	0.19	0.23	0.23
PM	"	1.79	2.43	2.43	2.79	2.35
Nicotine	"	0.31	0.32	0.32	0.33	0.33
Formaldehyde	"	0.06	0.06	0.06	0.07	0.07
Acetaldehyde	"	0.17	0.24	0.28	0.28	0.29
HCN	"	0.02	0.03	0.02	0.01	0.02
NH3	"	0.62	0.58	0.59	0.64	0.68
DMNA	ng/puff	17.61	17.80	18.90	19.75	24.44
NNK	"	131.38	97.25	107.14	114.32	138.02

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